

Name:

Date:

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**PART A** In the space on the left, write the letter of the term or phrase which **best** completes the statement or answers the question (1 mark each).

- \_\_\_\_ 1. Which of the following is a vector quantity?  
a. Velocity  
b. Distance  
c. Displacement  
d. Speed
- \_\_\_\_ 2. An object at rest has a \_\_\_\_ on a displacement-time graph.  
a. Positive slope  
b. Negative slope  
c. Vertical slope  
d. Horizontal slope
- \_\_\_\_ 3. Which is an appropriate unit for displacement?  
a. m/s [E]  
b. m  
c. km/h  
d. km [E]
- \_\_\_\_ 4. An object's displacement is 18 m [E] during a six second interval. Its average velocity is ...  
a. 108 m/s  
b. 10.8 m/s  
c. 3 m/s  
d. 0.3 m/s
- \_\_\_\_ 5. When plotting a displacement-time graph, which data would you plot on the x-axis?  
a. Distance  
b. Time  
c. Displacement  
d. Velocity
- \_\_\_\_ 6. Which of the following denotes both magnitude and direction?  
a. Speed  
b. Displacement  
c. Distance  
d. Time

- \_\_\_ 7. The number of cycles that occur in a specific time interval is ...  
a. Time  
b. Period  
c. Displacement  
d. Frequency
- \_\_\_ 8. A zero slope on a displacement-time graph means ...  
a. Of the object is at the origin  
b. The object is at rest  
c. The object is moving west  
d. The object is moving north
- \_\_\_ 9. The following is a scalar quantity.  
a. Time  
b. Displacement  
c. Velocity  
d. Position
- \_\_\_ 10. An object travels 10 km from the origin, then an additional 15 km. Its displacement is ...  
a. 10km [E]  
b. 25 km [W]  
c. 5 km [E]  
d. There isn't enough information provided to calculate displacement.

**PART B** In the space provided mark each of the following as true or false. (1 mark each)

- \_\_\_ 1. Position is a scalar quantity.
- \_\_\_ 2. Time is a vector quantity.
- \_\_\_ 3. Slope is calculated by dividing the rise by the run.
- \_\_\_ 4. The slope of a distance-time graph represents speed.
- \_\_\_ 5. A displacement-time graph can have a vertical slope.
- \_\_\_ 6. Two people can be moving at the same speed but have different velocities.
- \_\_\_ 7. Scalars denote magnitude and direction.
- \_\_\_ 8. Distance can be calculated by multiplying speed by a time interval.
- \_\_\_ 9. Position is graphed on the x-axis of a displacement-time graph.
- \_\_\_ 10. Scalars and vectors both denote direction.

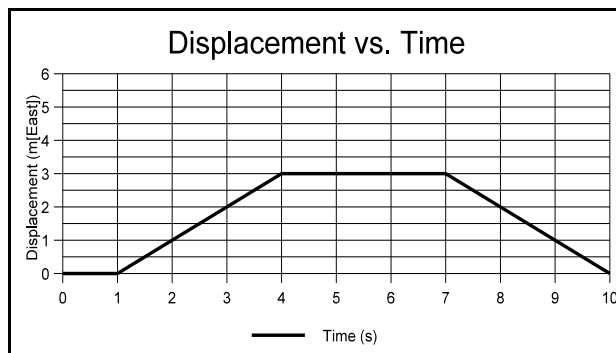
**PART C** In the space provided, match each term or phrase with the best definition. (1 mark each)

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|-----------------------|---|
| ___ 1. Frequency      | A. Describes when an event occurs.                                  |
| ___ 2. Object at rest | B. A scalar quantity that only describes length and not direction.  |
| ___ 3. Period         | C. The time interval between repeating events.                      |
| ___ 4. Time           | D. Describes a specific point relative to a reference point.        |
| ___ 5. Vector         | E. The number of cycles that occur in a time interval.              |
| ___ 6. Displacement   | F. Calculated by multiplying average velocity by its time interval. |
| ___ 7. Distance       | G. Describes magnitude only.  |
| ___ 8. Magnitude      | H. Has a slope of zero on a displacement-time graph.                |
| ___ 9. Position       | I. Describes the size of a measurement or an amount.                |
| ___ 10. Scalar        | J. Describes both magnitude and direction.                          |

**PART D** Each of the following questions requires a calculation.

1. Jared does four laps of the pool in 80 seconds. Calculate the period and frequency of Jared's laps. (2 marks)
2. Convert 135 km/h to m/s. (1 mark)
3. An object moves 57 m in 6 seconds. Calculate the speed of the object. (1 mark)
4. An object moves 182 km in 4 hours. Calculate the speed of the object. (1 mark)

**PART E** Use this displacement-time graph to answer questions 1–12.



For each time interval in questions 1–4, describe the motion of the object. Be sure to include mention of the displacement, direction, type of motion, and time interval where applicable. (1 mark each)

1. 0s–1s
2. 1s–4s
3. 4s–7s
4. 7s–10s

For each of the following time intervals in questions 5–8, calculate the displacement, being sure to include the direction. (1 mark each)

5. 0s–1s
6. 1s–4s
7. 4s–7s
8. 7s–10s

For each of the time intervals in questions 9–12, calculate the velocity of each object. Remember to describe the velocity as either east or west where applicable. (1 mark each)

9. 0s–1s

10. 1s–4s

11. 4s–7s

12. 7s–10s

Calculate the distance of the following objects in questions 13–14. (1 mark each)

13. An object has a speed of 7 m/s for 13 seconds.

14. An object has a velocity of 64 km/h for 3.5 hours.

Calculate the time of the following scenarios in questions 15–16. (1 mark each)

15. An object travels at 8 m/s. How long would it take the object to travel 116 m?

16. An object travels at 60 km/h. How long would it take the object to travel 135 km?